COVER SHEET

Learning to learn: Information literacy and nursing

Authors:

Dr. Alan Barnard RN., BA., MA., Ph.D.
Senior Lecturer
School of Nursing
Queensland University of Technology
Victoria Park Road
Kelvin Grove
Queensland 4059
Australia

Telephone: (07) 3864 2111
Facsimile: (07) 3864 3814
E-mail: a.barnard@qut.edu.au

Ms. Robyn Nash RN., BA Dip AppSc(NEd)., MHSc
Associate Professor
School of Nursing
Queensland University of Technology

Mr. Michael O'Brien BA., B Ed., MHSc
Senior Research Assistant
School of Nursing
Queensland University of Technology

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Abstract

The amount and complexity of information with which nurses have to deal continues to grow exponentially. Support has grown for integrated curriculum approaches that include appropriate instruction in the use of a variety of information formats and instruction which focuses on a resource-based and process approach. This paper argues that collaboration has to be fostered in meaningful ways between teaching faculty and librarians for information literacy enhancement. Such approaches to teaching and learning demand a major shift in educational paradigms and encompass resource-based learning, undergraduate research, service learning inquiry learning and problem-based learning. The implementation of an integrated curriculum promises advanced information skills, access and use of available evidence to support clinical decision making and a foundation for lifetime learning. This paper reports on the rationale of an integrated curriculum, changes to nursing education and obstacles within higher education and workplaces to the development and application of advanced information skills.

Key words: nursing, information literacy, critical thinking, education, clinical practice, higher education, nurse education

Introduction

That 'The Digital Age' has superseded the 'The Information Age' is not a revelation. It should be noted however that information remains the foundation for modern human endeavour. As such, the practice of nursing has not escaped the exponential growth in the amount and complexity of information in recent decades. It has been estimated that information relevant to nursing doubles every five years (Verhey, 1999).

Efforts to structure the practice of nursing around the efficient and effective use of information relevant to health care have been strongly endorsed. The all-encompassing 'evidence based practice' movement supports the development of a research basis for health-care practice and requires that nurses have the skills 'to access, appreciate and apply pertinent research findings to their practice' (Wallace et al., 1999: 137). Leading nursing organisations reflect this emphasis. Embedded within the Australian Nursing Council (ANC) competencies for registered nurses, is the declaration that for nurses to provide safe and effective care, they need a knowledge base and skills development to be able to incorporate research findings into practice (Wallace, *et al.,* 1999: 136). Contrast however between the potential availability of relevant information and access to it is quite marked. It is accepted that practicing nurses under-utilise nursing literature (Verhey, 1999). Whilst digitalisation may have meant that ever-increasing amounts of information are available, access to this information is not straightforward. It is a function of knowledge and skill levels in searching the literature, time constraints and degree of emphasis on research-based and information-based clinical practice in workplaces (Verhey, 1999; Blythe & Royle, 1993; Blythe, Royle, & Oolup et al., 1995).

Ignoring (for the time being) structural impediments to change, having a workforce able to access and effectively use information retrieval systems must be a necessary foundation for efficient and effective information use by nurses. To maintain competence in theory and practice throughout a career, it is argued that a nursing graduate must be able to '*recognise, solve information problems and learn from information resources'* (Bruce & Candy, 1995: 1) and that professional development courses need to maintain, build on and expand information literacy skills. The development of information literacy competencies are a foundation for critical thinking in nursing yet only a few published accounts of innovative strategies are described in the published literature (Verhey, 1999: 252). There is a trend in nurse education to emphasise the need to ensure that graduates can independently identify and cultivate their information needs, finding information necessary for professional practice and evaluate information effectively throughout their careers (Snavely and Cooper, 1997: 9). Thus justification of the place of information literacy in nursing education programs and how nursing education programs can best prepare information literate graduates will be explored in this paper.

The wider context

Changes are occurring across education sectors around the world. Over the past 20 years Australian higher education has undergone a period of sustained change in range of areas including curriculum development Employer needs in addition to student and professional association requirements have become significant drivers of course improvement and design. Issues of general capabilities and graduate attributes have become central issues for debate. Being information literate is a desired

capability for university graduates. Principles related to information literacy enhancement have influenced the development of university curricula since they and workplace environments are increasingly mediated by digital and online technologies.

Within these changes information literacy, whilst commonly associated with information technology skills, has come to encompasses a much broader area of competence. Breivik and Gee (1989) define information literacy as the ability to effectively access and evaluate information for a given need (Verhey, 1999: 252). Bruce and Candy (1995: 1) add that this information comes from a range of sources and is used for problem solving, decision-making and research - perennial needs in modern workplaces (Bruce, 1999b: 33). Hence, the relevance of information literacy is framed often within the notion of lifelong learning (Kapitzke, 2003: 42).

To be information literate means lifelong learning can be initiated, extended and sustained through abilities that may use technologies but are independent of them. The goal of transforming learners into lifelong learners is meant to assure 'continuing currency and competencies amid rapid change' (Marcom, 2002: 18). The idea of lifelong learning and the centrality of information literacy have made various inroads into the policy and programs of Australian universities. Many universities are now seriously attending to lifelong learning as a graduate outcome (Bruce, 2001: 107). In this environment the increasing connections between information literacy, university curricula and workplace needs are not surprising given that being information literate with, and about information, emerged not from educational context but from the industrial sector and educational reform(s) reflect the imperatives of a global economy (Kapitzke, 2003). Rhetoric associated with information literacy centres on the notion that to operate effectively in an information society, people need to identify information needs, locate relevant information, organise and evaluate information and interact with information professionals in 'making effective use of information in problem-solving, decision-making and research' (Bruce, 1999b: 46).

Kapitzke (2003: 40) argues that there is a presupposition that 'information literacy bestows power on those who understand and apply its precepts and standards' and 'that in and of itself [information literacy] is a key to prosperity of both the individual and the nation in the new knowledge economy'. In our contemporary environment of continuous technological change, information literacy is conceived as both a vital set of skills for the 21st century (Bruce & Candy, 1995: 1) and a foundation for learning (Bruce, 2002: 1).

Nursing and information literacy

Because healthcare is subject to the same forces determining workplace practices throughout the global economy, 'information literacy' as a concept and as a movement, has relevance both to the training and practice of nursing. Yeoh (2000) argues that information literacy has primacy amongst epidemiology, genetics, change management and information technology as key competencies or literacy's essential for future healthcare provision. Yeoh (2000: 14) asserts that:

> *the skills of analysing and synthesising the evidence of research and practice are crucial to the underpinning of these literacies.*

It is argued that the delivery of safe, effective nursing care requires the use of an evidence-based approach to practice (Shorten, Wallace & Crookes, 2001) which

requires adequate access and the ability to synthesise information. The ongoing application of new clinical knowledge is seen as a vital component to maintaining competence in theory and practice over the lifetime of a career.

Benefits are seen to be many. The development of information literacy not only facilitates engagement with effective decision-making, problem solving and research, but also enables nurses to take responsibility for continued learning in areas of personal or professional interest.

It is thus argued that undergraduate nursing students develop a sound repertoire of information literacy skills. However, nursing educators are only now beginning to focus on it as a primary area for the development of critical thinking skills and the use of information in valued ways.

An important educational opportunity exists to enhance information literacy in order to assist nurses to develop a repertoire of information literacy skills, enhance the quality of teaching and learning and foster needed skills for clinical practice and life long learning.

Models of information literacy education

It has been commonplace to develop information literacy skills in Bachelor of Nursing programs in unsystematic rather than as a result of explicit and systematic processes of development. Examples of strategies incorporated often include lectures on academic writing and/or learning activities for first year nurses related to the development of computer skills and the use of databases for identifying important learning resources.

Libraries continue to exercise considerable responsibility for familiarising students with basic search strategies, however recent advances in information access and application suggest that whole courses must formally initiate strategies for the enhancement of information literacy skills.

Before, during and after these activities, issues of low self-confidence and poor skill level were adversely affecting research behaviour. Fox et al., (1996) found that prior to the implementation of a 'Pathways to Information Literacy' program relatively low numbers of beginning nursing students were confident about their ability to locate needed information in the university library, use indexes and computer databases. Similarly, Verhey (1999) found that over the course of 2 separate studies, less than 30% of nursing students reported feeling *very successful* in seeking information for assignments in their course.

Despite a variety of steps taken to improve students' information literacy skills, the most commonly identified barrier to accessing information resources by students in Verhey's second study was a lack of knowledge about using resources. In addition, Cheek and Doskatsch (1998) confirm also that although nursing students are increasingly computer literate, they continue to have problems identifying, defining, analysing and articulating the nature of their information needs. These experiences highlight the very real complexity of the challenge facing nursing educators who wish to apply resources to the development of information literacies.

It is claimed that there are inherent weaknesses if information literacy is inadequately applied within models that do not focus upon an entire curriculum. According to Bruce (1997: 4) integration of information literacy skills into individual subjects (units) alone has *limited impact unless they are supported by, and integrated with, other parts of the overall course*. One-off demonstration-style information skills classes (e.g. how to use a specific database) delivered out of curriculum context do not necessarily coincide with the student's need for information and are sometimes not valued by students. In fact, it may be the case that they do not necessarily prepare nurses for the challenges of research, problem solving and continuous learning (Orr, Appleton & Wallin, 2001: 457).

O' Hanlon (2002: 63) asserts that one experience is not enough to develop true competency, as students quickly lose the skills. Skills evaluation needs to be followed by a multi-level skills training program disbursed across the curriculum. For example, a self-diagnostic internet skills proficiency test has been designed to assess entry-level competencies prior to enrolment in a four-week online credit course was implemented at Ohio State University. O' Hanlon (2002: 55) notes that while students often self-report a high level of skill, this test as well as anecdotal evidence may not support this assertion. O'Hanlon argues that educators must not assume student competence, but rather, should systematically assess incoming students and provide a variety of learning opportunities.

Alternative approaches to preparing nursing students to cope with increasing amounts of available information have implications for curriculum development and teaching strategies and the way educators traditionally have worked. It is argued by many that achieving competency in information literacy requires an understanding that this cluster of abilities is not extraneous to the curriculum but is woven into the curriculum's content, structure, and sequence (Bruce, 1997; Orr, Appleton & Wallin, 2001; Verhey, 1999). Curricular integration affords many possibilities for furthering the influence and impact of student-centred teaching methods such as problem-based learning, evidence-based learning, and inquiry learning (Marcom, 2002).

Gaining skills in information literacy multiplies the opportunities for students' self-directed learning, as they become engaged in using a wide variety of information sources to expand their knowledge, ask informed questions, and sharpen their critical thinking for still further self-directed learning. Breivik (1998) argues that the facilitation of active learning using real world information resources involves shifting from *the dominant paradigm of pre-packaging information for students in the form of textbooks, lectures and even artificially constrained multimedia resources* (Bruce, 2002: 5).

Guided by faculty and others in problem-based approaches, students reason about course content at a deeper level than is possible through the exclusive use of lectures and textbooks. To take fullest advantage of problem-based learning, students must often use thinking skills requiring them to become skilled users of information sources in many locations and formats, thereby increasing their responsibility for their own learning. Effective curriculum development engages an entire course and reduces unnecessary duplication of content areas whilst maximising the scope and sequence of key concepts and skills across all subject areas. There must be an appropriate focus on key skills, knowledge and competencies that are essential for the development of expertise. Outstanding achievements are likely to be achieved when courses are

structured in such a way that inquiry is the norm, problem solving is the focus and the development of critical thinking is a natural and ongoing process.

Strategies should therefore meet the needs of industry, students and the discipline. For example, a common view is that industry, in its broadest context, needs a certain type of worker *who learns continuously, works with little direct supervision, and can solve problems* (Warmkessel & McCade, 1997: 81). Accordingly, learners should experience information literacy in professional courses in ways that are consonant with the experience of information literacy in professional practice (Bruce, 1999b).

On a broader level, information literacy skill development within a range of subjects and throughout an entire undergraduate course improves the chances of incremental development and the transfer of skills and knowledge. This strategy needs to be adopted across a whole department or faculty but it requires many academics to change the way they traditionally work (Wallace, et al., 1999).

Thus incorporating information literacy skills into curricula requires the collaborative efforts of academics, librarians, administrators and the institution(s) in which they all work. In particular, teachers and librarians should have complementary, though distinct, roles in helping students become information literate. It is argued that opportunities for information literacy skills development should focus on equipping them with specific content knowledge and research skills necessary for information retrieval. It is therefore not surprising that there have been calls for a restructuring of the relationship(s) between librarians and academics. To bring about change and integration, strategic partnerships between students, information specialists, curriculum designers, community organisations and teachers are required in order to maximise outcomes and effort. Strategic partnerships between academics and librarians promote information literacy and assist students to develop as autonomous information users. Librarians have knowledge of the fast-changing electronic information environment whilst academics have the subject knowledge and the responsibility to manage student learning (McDowell, 2002).

However, restructuring should go beyond establishing superficial collaborative links between the information experts and those with specialist content knowledge. Bruce concludes that *information literacy does not have life of its own…rather it is a way of thinking and reasoning about aspects of subject matter* (Grafstein, 2002: 202). Breivik (1989, 1998) successfully argued that information literacy is central to the learning process (Marcom, 2002: 2).

An information literacy approach to curriculum-integrated is one in which the development of appropriate skills and knowledge is integrated into the teaching, learning and assessment of curriculum objectives and content (Wallace, et al., 1999). Teaching, learning and assessment are shared in a holistic way between librarians and academic staff.

In summary, Bruce (2002: 12), notes there are five critical components to any course that assists to integrate information literacy across a program of study:

- Resources that facilitate the learning of specific skills eg web-based information skills and other self paced instruction

- Curriculum that provides opportunity to learn specific skills across a course, whether early in a course or at point of need (from self paced packages, lectures librarians)
- Curriculum that enhances learning activities that require ongoing interaction with information environments
- Curriculum that provides opportunities for reflection and documentation of learning about effective information practices.
- Curriculum that emphasises simultaneously a process orientation to teaching, a learner-centred view of learning, and an increased emphasis on the pedagogical implications of the perceptual worlds of students

Integrated information literacy and nursing education

Nursing education literature has devoted little attention to the incorporation of integrated information literacy into courses that go beyond collaborating with librarians (Grafstein, 2002: 197). In addition, there has been minimal discussion as to the educational principles involved in implementing an integrated information literacy program.

Notwithstanding there have been several attempts to integrate information literacy into nursing education programs described in the literature. In 1993, the curriculum of the Bachelor of Nursing at California State University was rewritten to include a specific information literacy strand across the curriculum. Skills were taught across semesters and subjects such as database instruction, begin in semester one. During semester five students prepare a mini review of the literature in the area of their clinical interest that includes a synthesis of the implications for nursing practice (Verhey, 1999: 255).

At the University of Wollongong, Australia, information literacy skills are integrated as a core subject within the Bachelor of Nursing program. Nurse academics and librarians designed a staged program of learning activities and assessment tasks that take students from understanding citations to critically analysing articles as preparation for writing literature reviews (Bruce, 2001: 108). Fundamental skills in information literacy are reinforced, consolidated and developed in later subjects of the course, thereby attempting to enhance student motivation and learning (Wallace, et al., 1999: 138).

The QUT Bachelor of Nursing program

A further Australian example from the QUT School of Nursing is the *InfoLit-Nursing* Strategy which has been developed collaboratively by staff in the School of Nursing and the QUT Library and implemented from the beginning of 2003 within the Bachelor of Nursing course (and related double and joint degree programs). The *InfoLit-Nursing* strategy is based on QUT's Information Literacy Framework and Syllabus, and incorporates the relevant components of the current Australian Nursing Council (ANC) Competencies for registered nurses. It also draws upon the writings of Bruce (1995), Rushton (1996) and Wallace et al., (1999).

InfoLit-Nursing is designed as a 'whole of course' strategy with incremental increases in the complexity of learning activities and expectations of students' performance from Year 1 through to Year 3. Key elements of the strategy include the identification of specific outcomes to be achieved, focussed learning activities that include the

participation of library staff within the course, the development of exemplars for students at different levels of the course, incorporation of information literacy outcomes within assessment items, and self assessment activities for students to reflect on their learning.

It is thought that curricula should provide explicit opportunity(ies) for students to use information technology including a range of relevant bibliographic, human and organisational information sources. Students need to develop personal heuristics for the application of information processes and be able to control information through establishing and mapping or formalising relevant connections. A primary conception behind the strategy has been the view that it is essential that nurses learn to foster a critical approach to knowledge construction when using information and exercise their intuitive capacities whilst drawing upon personal values and ethics.

Although the initiatives are under ongoing evaluation, it is believed that the integration of enhanced information literacy across nursing curricula connects learning and development across subject boundaries in order to focus on critical thinking and knowledge necessary for success. Thus the objective is to increase student information literacy within the context(s) of natural connections rather than the isolation of certain skills and knowledge from one another.

Internal and External Barriers

Such approaches to teaching and learning demand a major shift in commonplace educational paradigms. As such, there will be support and there will be forces that will resist change and challenge their implementation. Beyond this resistance, which should not be underestimated, there are also the difficulties in establishing the necessary momentum for change amongst educators who may already feel over-burdened with on-going tasks and ever-increasingly responsibilities in a resource-poor environment.

Even if integration occurs, limited resources do provide challenges. Orr *et al.,* (2001: 462) notes that problems may remain because there may be little opportunity to provide individualised instruction within defined student groups. Students are treated homogenously and targeted literacy enhancement may be problematic. Under these conditions challenges will emerge when trying to cater for the attributes of each student learning in a particular context and there may be limited scope to meet the learning needs of students with advanced information literacy skills.

But ultimately the degree to which a graduate nurse with advanced information literacy skills can apply them in the workplace will depend on access to technology and the strength of structural barriers to change which act as a disincentive to the use of the nursing literature in clinical practice. For example, it has been claimed that nurses in clinical practice can experience considerable problems when seeking to access library services (Yeoh, 2000). Restricted access to information resources, time constraints and little emphasis on research-based and information-based clinical practice in workplaces inhibit the application of advance information skills and defeats the purposes of curricular that seek to assist the development of important information literacy skills and knowledge. For example, in a study conducted by Webster, Davis, Holt, Stallan, New & Yegdich (2003) it was noted that deliberate strategies are needed if access to appropriate clinical resources is to translate into improved patient care. Webster et al., (2003; 145) conclude that:

to maximise the possibility of nurses basing their practice on research evidence, interventions designed to support access to and understanding of information retrieval systems are essential.

Conclusion

Information literacy skills are 'pre-requisite' to the implementation of evidence-based approaches to clinical practice and continued professional and personal development. The value of information literacy has been both accentuated and accelerated by the proliferation of available information. Information literacy is a need common to all disciplines, to all learning environments and to all levels of education. Appropriate skills and knowledge enables learners to master content and extend their investigation(s), become more self-directed, and assume greater control over their own learning. An information literate individual is able to determine the extent of information needed, access the needed information effectively and critically evaluate information and its sources. The development of information literacy skills enhances the growth of critical thinking and problem solving whilst providing an important expertise for lifelong learning.

Both the medically led evidence-based practice and clinical governance movement have impacted on the increasingly extended role of the nurse (Barnard & Cushing, 2001; Yeoh, 2000). It is essential for contemporary nursing education and clinical practice that all students can incorporate selected information from a range of knowledge bases, use information effectively to accomplish a specific health care and learning goals. In addition, they need to understand the economic, legal, and social issues surrounding the use of information and access and use information ethically and legally.

It has been argued that information literacy is integral to education that is learner centred, experiential and stresses reflective practice. Collaborative approaches to program implementation and development are essential especially partnerships between stakeholders. Educational leaders within nursing need to ensure progressive development of information skills and the advancement of educational strategies that encourage regular use of information skills across an entire curriculum.

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